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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/512,949	02/25/2000	Guang-Ho Cha	AM9-99-0217	6841

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EXAMINER	
PANNALA, SATHYANARAYA R	
ART UNIT	PAPER NUMBER

2177

DATE MAILED: 04/10/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/512,949	CHA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	SathyanaRayan Pannala	2177	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 25 February 2000.
- 2a) This action is FINAL.                  2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-24 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 25 February 2000 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
 If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to because they fail to show specifics to the examiner since very badly organized with handwritten script in Figs. 1-7 as described in the specification. For example, placing a label "Computer System" with element 200 of Fig. 1, would give the viewer necessary detail to fully understand this element at a glance. A **descriptive** textual label for **each numbered element** in these figures would be needed to fully and better understand these figures without substantial analysis of the detailed specification. Any structural detail that is of sufficient importance to be described should be shown in the drawing. Optionally, applicant may wish to include a table next to the present figure to fulfill this requirement. See 37 CFR 1.83. 37 CFR 1.84(n)(o) is recited below:

"(n) Symbols. Graphical drawing symbols may be used for conventional elements when appropriate. The elements for which such symbols and labeled representations are used must be adequately identified in the specification. Known devices should be illustrated by symbols, which have a universally recognized conventional meaning and are generally accepted in the art. Other symbols, which are not universally recognized, may be used, subject to approval by the Office, if they are not likely to be confused with existing conventional symbols, and if they are readily identifiable.

(o) Legends. Suitable descriptive legends may be used, or may be required by the Examiner, where necessary for understanding of the drawing, subject to approval by the Office. They should contain as few words as possible."

***Specification***

2. The disclosure is objected to because of the following informalities: [1].

Appropriate correction is required.

[1] There is no provision in 37 CFR 1.71 for law interpretations of claim analysis in the detailed specification on pages 12-13. Applicant is required to delete paragraphs last part on pages 12-13 of the specification.

3. The use of the trademark Java has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The analysis under 35 U.S.C. 112, first paragraph, requires that the scope of protection sought be supported by the specification disclosure. The pertinent inquiries include determining (1) whether the subject matter defined in the claims is described in

the specification and (2) whether the specification disclosure as a whole is to enable one skilled in the art to make and use the claimed invention.

5. Claims 1-24 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The enablement requirement necessitates a determination that the disclosure contains sufficient teaching regarding the subject matter claimed as to enable one skilled in the pertinent art to make and use the claimed invention. In essence, the scope of enablement provided to one ordinarily skilled in the art by the disclosure must be commensurate with the scope of protection sought by the claims.

Currently, the most prevalent standard for measuring sufficient enablement to meet the requirements of 112 is that of "undue experimentation". The test is whether, at the time of the invention, there was sufficient working procedure for one skilled in the art to practice the claimed invention without undue experimentation. It is important to note that the test of enablement is not whether any experimentation is necessary, but whether, if experimentation is necessary, is it undue. A skilled artisan is given sufficient direction or guidance in the disclosure. Moreover, the experimentation required, in addition to not being undue, must not require ingenuity beyond that expect of one of ordinary skill in the art.

Undue experimentation and ingenuity would be required beyond one ordinarily skilled in the art to practice: 1) "dimensionality of 'd'" at claims 3, 8, 11 and 13;

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2) "  $d_{min1} < k\text{-NNdist}(q)$  " at claim 13; 3) "approximations" at claims 1, 8, 15. These approximations are based on the formula/expression or variable "K-NNdist". Thus, Approximation would cause undue experimentation.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

7. Claims 1-4, 8-12, 15-18, 22-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Fayyad et al. (US Patent 6,263,334).

Fayyad anticipated independent claims 1, 8 and 15 by the following:

"for at least some data vectors in a data space, generating respective approximations in polar coordinates." Approximation is interpreted as probability function at Figs. 7 & 8, col. 7, lines 55-67 to col. 8, lines 1-14; "based on the approximations, returning "k" nearest neighbors to the query." at Figs. 2B, col. 4, lines 55-67 to col. 5, lines 1-3.

8. As per dependent claims 2, 10 and 16, Fayyad anticipated by the following:

"dividing the data space into plural cells" at Fig. 3A, col. 5, lines 4-8; "representing at least one data point in at least one cell in polar coordinates with respect to the at least one cell." at Fig. 3B, col. 5, lines 19-31;

9. As per dependent claims 3, 11 and 17, Fayyad anticipated by the following:  
"determining a number of "b" bits to be assigned to each cell." at Fig. 4D, col. 7, lines 1-17;  
"dividing the data space into 2<sup>bd</sup> cells." at Fig. 4D, col. 7, lines 23-36.
10. As per dependent claims 4 and 18, "generating a candidate set of approximations based at least on the lower bounds dmin of the approximations" at Fig. 9A, col. 12, lines 46-54.
11. As per dependent claim 9, "the means for generating generates respective approximations of data vectors p in local polar coordinates." at Fig. 2, col. 8, lines 35-43.
12. As per dependent claim 12, "computer readable code means for generating a candidate set of approximations based at least on the lower bounds dmin and upper bounds dmax of the approximations. at Fig. 9A, col. 12, lines 46-59.
13. As per dependent claims 22, 23 and 24, "generating a candidate set of approximations based at least on the upper bounds dmax of the approximations." at Fig. 9A, col. 13, lines 7-10.

***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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"A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made."

15. Claims 5-7, 13-14, 19-21 rejected under 35 U.S.C. 103(a) as being unpatentable over Fayyad et al. (US Patent 6,263,334) as applied to claims above, and further in view of Staats (US Patent 5,619,717).

16. As per claims 5, 13 and 19, "adding a first approximation having a first lower bound dmin1 to the candidate set if  $d_{min1} < k\text{-NNdist}(q)$ , wherein  $k\text{-NNdist}(q)$  is the  $k$ th largest distance between the query vector  $q$  and nearest neighbor vectors  $p$ ." Fayyad does not teach explicitly using vectors in nearest neighbor search. However, Staats teaches for determining the nearest neighbor of a data vector. (Figs. 2 & 4, col. 6, lines 62-67 to col. 7, lines 1-36). Thus, it would have been obvious to one ordinarily skilled in the art at the time of the invention decide to use a technique of finding the nearest neighbor of a data vector without searching all quantized vectors in a codebook. Staats technique accelerates the efficiency of vector quantization.

17. As per dependent claims 6, 14 and 20, Staats teaches "using the candidate set to return " $k$ " nearest neighbors vectors  $p$  to the query vector  $q$ ." at Figs. 5, col. 8, lines 62-67.

18. As per dependent claims 7 and 21, Staats teaches "not all vectors p corresponding to approximations in the candidate set are examined to return the 'k' nearest neighbors." at Figs. 5, col. 9, lines 1-4.

***Conclusion***

19. The prior art made of record, listed on form PTO-892, and not relied upon, if any, is considered pertinent to applicant's disclosure.

20. If a reference indicated, as being mailed on PTO-FORM 892 has not been enclosed in this action, please contact Lisa Craney whose telephone number is (703) 305-9601 for faster service.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sathyanarayan Pannala whose telephone number is (703) 305-3390. The examiner can normally be reached on 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (703) 305-9790. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

*SRP*  
Sathyanarayan Pannala  
Examiner  
Art Unit 2177

srp  
April 3, 2002

*John E. Breene*  
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